

**HIGH LINEAR DENSITY TUNNEL JUNCTION FLUX GUIDE
READ HEAD WITH IN-STACK LONGITUDINAL BIAS STACK (LBS)**

ABSTRACT OF THE DISCLOSURE

5 Several embodiments of a sense current perpendicular to the planes of the sensor (CPP) and flux guide type of read head has a gap between first and second shield layers at an air bearing surface (ABS) where the flux guide is located which is less than a gap between the first and second shield layers at a recessed location where the sensor is located. This reduced gap increases the linear bit density capability of

10 the read head. A longitudinal bias stack (LBS) is located in the sensor stack. Several unique methods of construction are described for forming the magnetic head assemblies.